1. Which of the following intervals describes the Range of the function below?

$$f(x) = \log_2(x - 7) - 1$$

A. $[a, \infty), a \in [-9, -6.1]$

B. $(-\infty, a), a \in [0.9, 2.4]$

C. $(-\infty, a), a \in [-2.7, 0.2]$

D. $[a, \infty), a \in [6.8, 8.3]$

E. $(-\infty, \infty)$

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2. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_5(4x + 8) + 6 = 2$$

A. $x \in [-258, -255]$

B. $x \in [-256, -253]$

C. $x \in [-5, 1]$

D. $x \in [3.25, 10.25]$

E. There is no Real solution to the equation.

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3. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2(x - 1) - 1$$

A. $(-\infty, a), a \in [0.6, 3]$

B. $[a, \infty), a \in [0.6, 3]$

C. $(-\infty, a), a \in [-1.1, 0.8]$

D. $[a, \infty), a \in [-1.1, 0.8]$

E. $(-\infty, \infty)$

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4. Solve the equation for x and choose the interval that contains x (if it exists).

$$16 = \ln \sqrt[5]{\frac{20}{e^{3x}}}$$

A. $x \in [-11.67, -5.67]$

B. $x \in [23.67, 26.67]$

C. $x \in [-9.62, -3.62]$

D. There is no Real solution to the equation.

E. None of the above.

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5. Solve the equation for x and choose the interval that contains x (if it exists).

$$10 = \sqrt[7]{\frac{24}{e^{5x}}}$$

A. $x \in [-1.29, 0.71]$

B. $x \in [-4.59, -0.59]$

C. $x \in [-18.64, -9.64]$

D. There is no Real solution to the equation.

E. None of the above.

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6. Which of the following intervals describes the Range of the function below?

$$f(x) = -e^{x-8} + 7$$

A. $[a, \infty), a \in [-7, -4]$

B. $(-\infty, a], a \in [5, 8]$

C. $(a, \infty), a \in [-7, -4]$

D. $(-\infty, a), a \in [5, 8]$

E. $(-\infty, \infty)$

7. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$4^{4x+4} = 125^{3x-4}$$

A. $x \in [2.4, 4.3]$

B. $x \in [-25, -24.8]$

C. $x \in [-9.6, -7.9]$

D. $x \in [0.8, 1]$

E. There is no Real solution to the equation.

8. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_2(-3x + 8) + 4 = 2$$

A. $x \in [1.33, 2.33]$

B. $x \in [-7, -2]$

C. $x \in [1.58, 7.58]$

D. $x \in [1.33, 2.33]$

E. There is no Real solution to the equation.

9. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$2^{-4x-2} = \left(\frac{1}{9}\right)^{-2x+4}$$

A. $x \in [-5, -2]$

B. $x \in [1.7, 4.7]$

C. $x \in [1.03, 3.03]$

D. $x \in [-1.84, 0.16]$

E. There is no Real solution to the equation.

10. Which of the following intervals describes the Range of the function below?

$$f(x) = -e^{x-3} + 9$$

A. $[a, \infty), a \in [-10, -7]$

B. $(-\infty, a], a \in [9, 12]$

C. $(-\infty, a), a \in [9, 12]$

D. $(a, \infty), a \in [-10, -7]$

E. $(-\infty, \infty)$